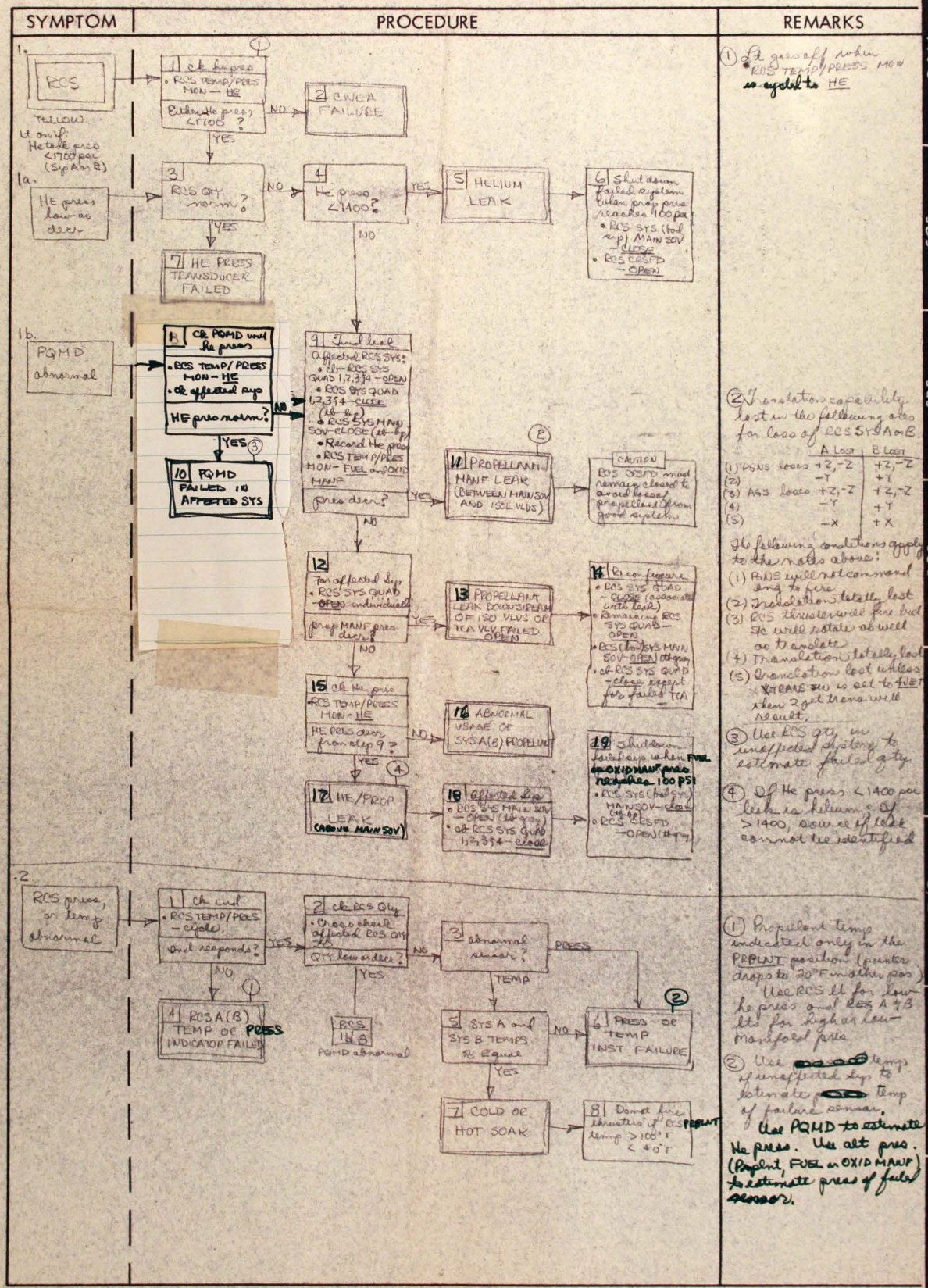
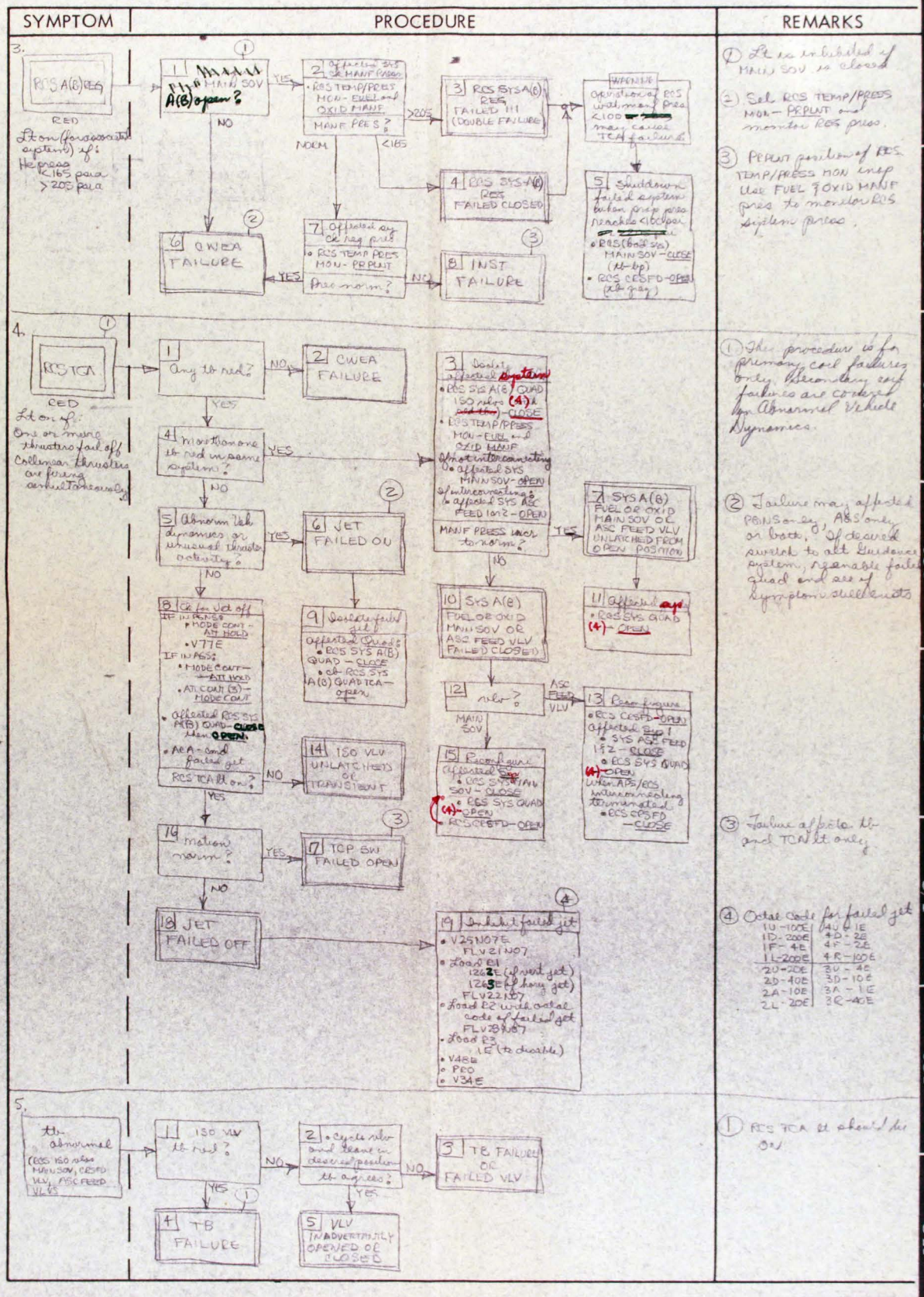
1-1-1967

Reaction Control System (RCS) - Malfunction symptoms 1 - 8 hand drawn diagrams

National Aeronatics and Space Administration (NASA)


SYMPTOM
PROCEDURE
REMARKS
1.
RCS
YELLOW
If on if: He tank press < 1700 psi (Sys A or B)
1 ck he press • RCS TEMP/PRES MON — HE Either He press < 1700 ?
YES
NO
2 CWEA FAILURE
1a.
HE press low as seen
3 RCS QTY normal?
NO
YES
4 He press < 1400?
YES
NO
5 HELIUM LEAK
6 Shut down failed system when prop press reaches 100 psi • RCS SYS (bad sys) MAIN SOV — CLOSE • RCS CRSFD — OPEN
7 HE PRESS TRANSDUCER FAILED
1b.
PQMD abnormal
8 Ck PQMD and He press • RCS TEMP/PRES MON — HE • Ck affected sys HE press normal?
NO
YES
10 PQMD FAILED IN AFFECTED SYS
9 Fuel leak Affected RCS SYS: • ck — RCS SYS QUAD 1,2,3,4 — OPEN • RCS SYS QUAD 1,2,3,4 — CLOSE (1 at a time) • RCS SYS MAIN SOV — CLOSE (1 at a time) • Record He press • RCS TEMP/PRES MON — FUEL and OXID MANF Press down?
YES
NO
10 PROPELLANT MANF LEAK (BETWEEN MAIN SOV AND ISOL VLVS)
CAUTION
RCS CRSFD must remain closed to avoid loss of propellant from good system
12 For affected sys • RCS SYS QUAD — OPEN individually prop MANF press down?
YES
NO
13 PROPELLANT LEAK DOWNSTREAM OF ISO VLVS OR ISO VLV FAILED OPEN
14 Reconfigure • RCS SYS QUAD — CLOSE (associated with leak) • Remaining RCS SYS QUAD — OPEN • RCS (in bad SYS MAIN SOV — OPEN (1 at a time) • ck RCS SYS QUAD — close except for failed TCA
15 Ck He press • RCS TEMP/PRESS MON — HE HE press down from step 9?
YES
NO
16 ABNORMAL USAGE OF SYS A (B) PROPELLANT
17 HE/PROP LEAK (ACROSS MAIN SOV)
18 Affected Sys • RCS SYS MAIN SOV — OPEN (1 at a time) • ck RCS SYS QUAD 1,2,3,4 — close
19 Shutdown failed sys when FUEL or OXID MANF press reaches 100 PSI • RCS SYS (bad SYS) MAIN SOV — close (1 at a time) • RCS CRSFD — OPEN (1 at a time)
.2
RCS press or temp abnormal
1 Ck cmd • RCS TEMP/PRES — cycle Cmd responds?
YES
NO
2 ck RCS Qty • Once check affected RCS QTY Qty low or dec?
YES
NO
3 abnormal reason?
PRESS
TEMP
4 RCS A (B) TEMP or PRESS INDICATOR FAILED
RCS IN B POPD abnormal
5 SYS A and SYS B TEMPS Equal
NO
YES
6 PRESS or TEMP INST FAILURE
7 COLD or HOT SOAK
8 Donot fire thrusters if RCS PROPLNT temp > 100°F < 40°F
1 Fuel gases off when • RCS TEMP/PRESS MON is cycled to HE
2 Translation capability lost in the following axes for loss of RCS SYS A or B
A Lost | B Lost
(1) PRNS loses +Z, −Z | +Z, −Z
(2) −Y | +Y
(3) AGS loses +Z, −Z | +Z, −Z
(4) −Y | +Y
(5) −X | +X
The following conditions apply to the notes above:
(1) PRNS will not command eng to fire
(2) Translation is totally lost
(3) RCS thrusters will fire but SC will not translate as well as to rotate
(4) Translation totally lost
(5) Translation lost unless XTRANS SW is set to 4JET then 2 jet trans will result
3 Use RCS qty on unaffected sys to estimate failed qty
4 If He press < 1400 psi leak is helium • If > 1400, source of leak cannot be identified
1 Propellant temp indicated only in the PRPLNT position (pointer drops to 20°F in other pos) Use RCS A/B He press and RCS A/B Qty for high or low manifold pressure
2 Use RCS temp if unaffected sys to estimate OXID temp if failure occurs. Use PQHD to estimate He press. Use alt press. (Propint, FUEL or OXID MANF) to estimate press of failed sensor.
G&N MALFUNCTION
SCS MALFUNCTION
SPS MALFUNCTION
RCS MALFUNCTION
EPS MALFUNCTION
T/C MALFUNCTION
ECS MALFUNCTION
SEQ MALFUNCTION



G&N MALFUNCTION
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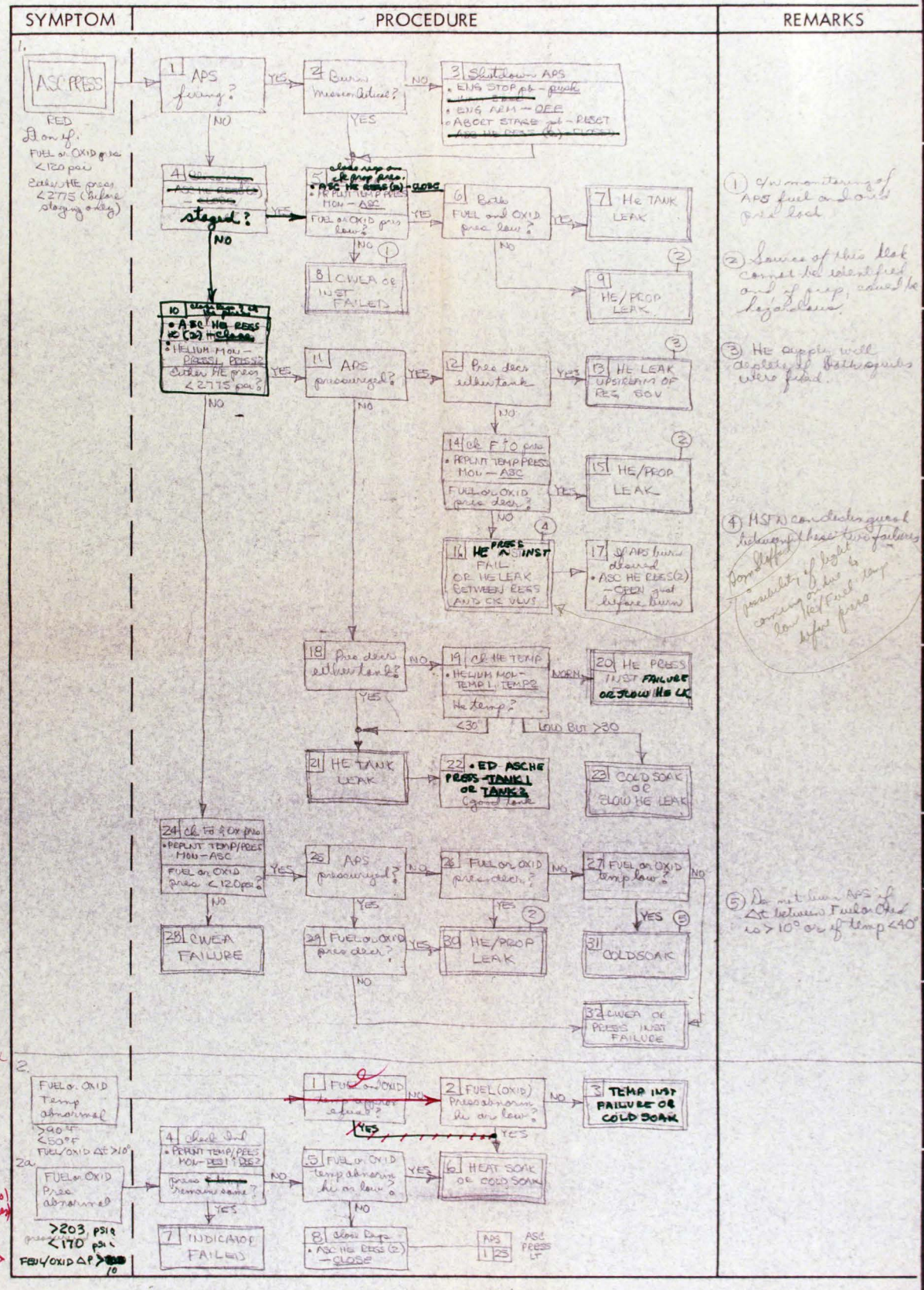
RCS
master
proc 3,9,5



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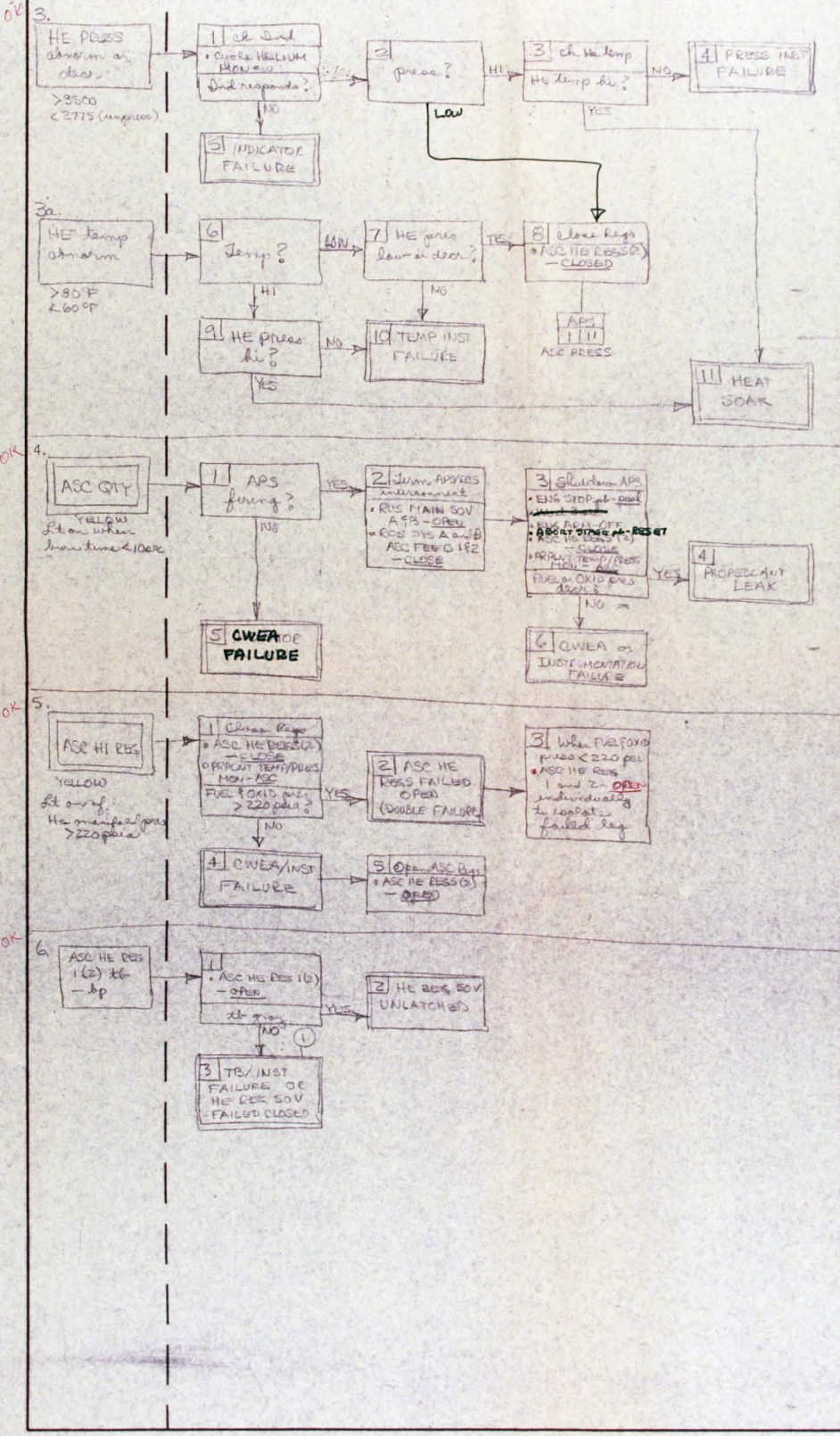

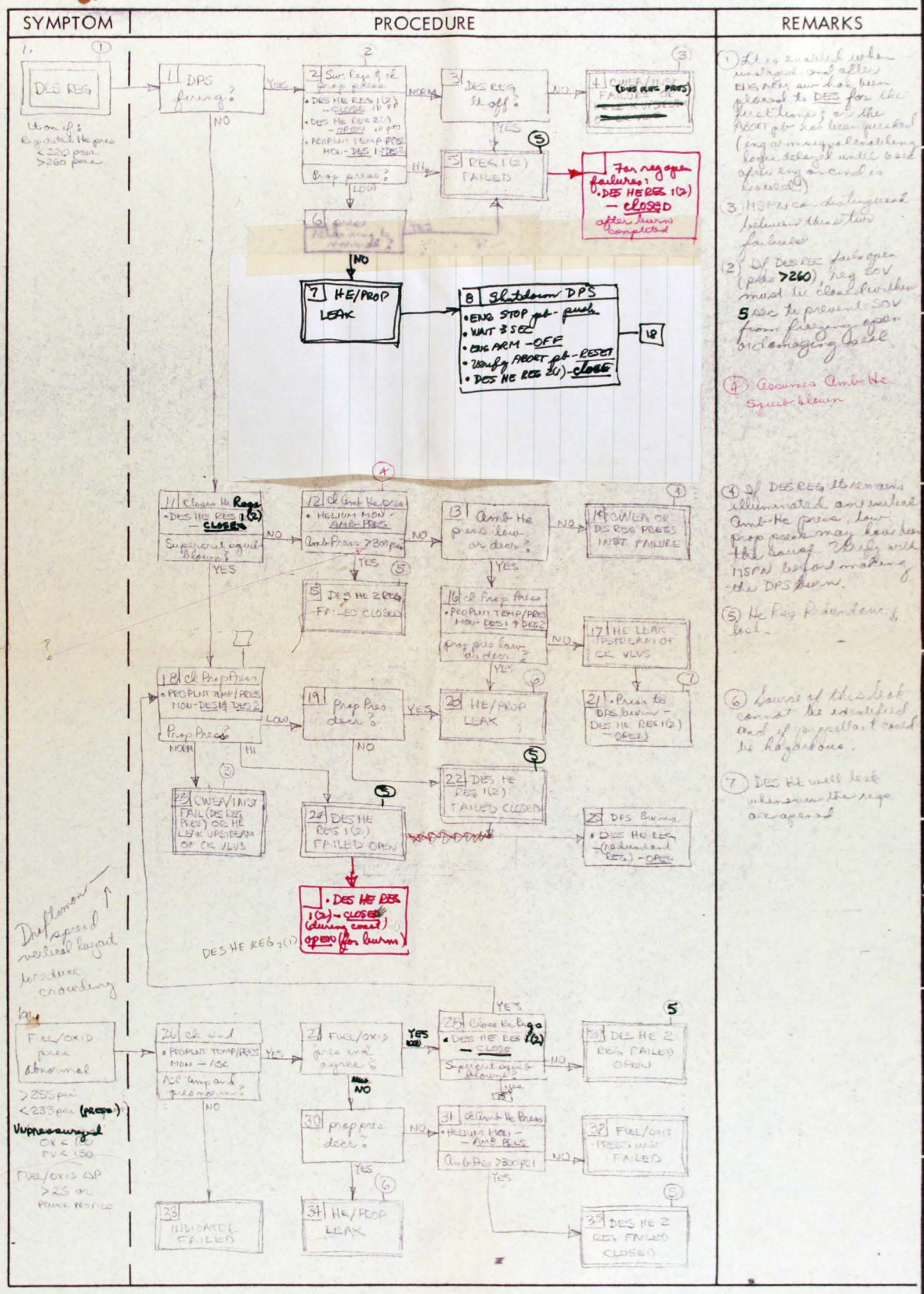

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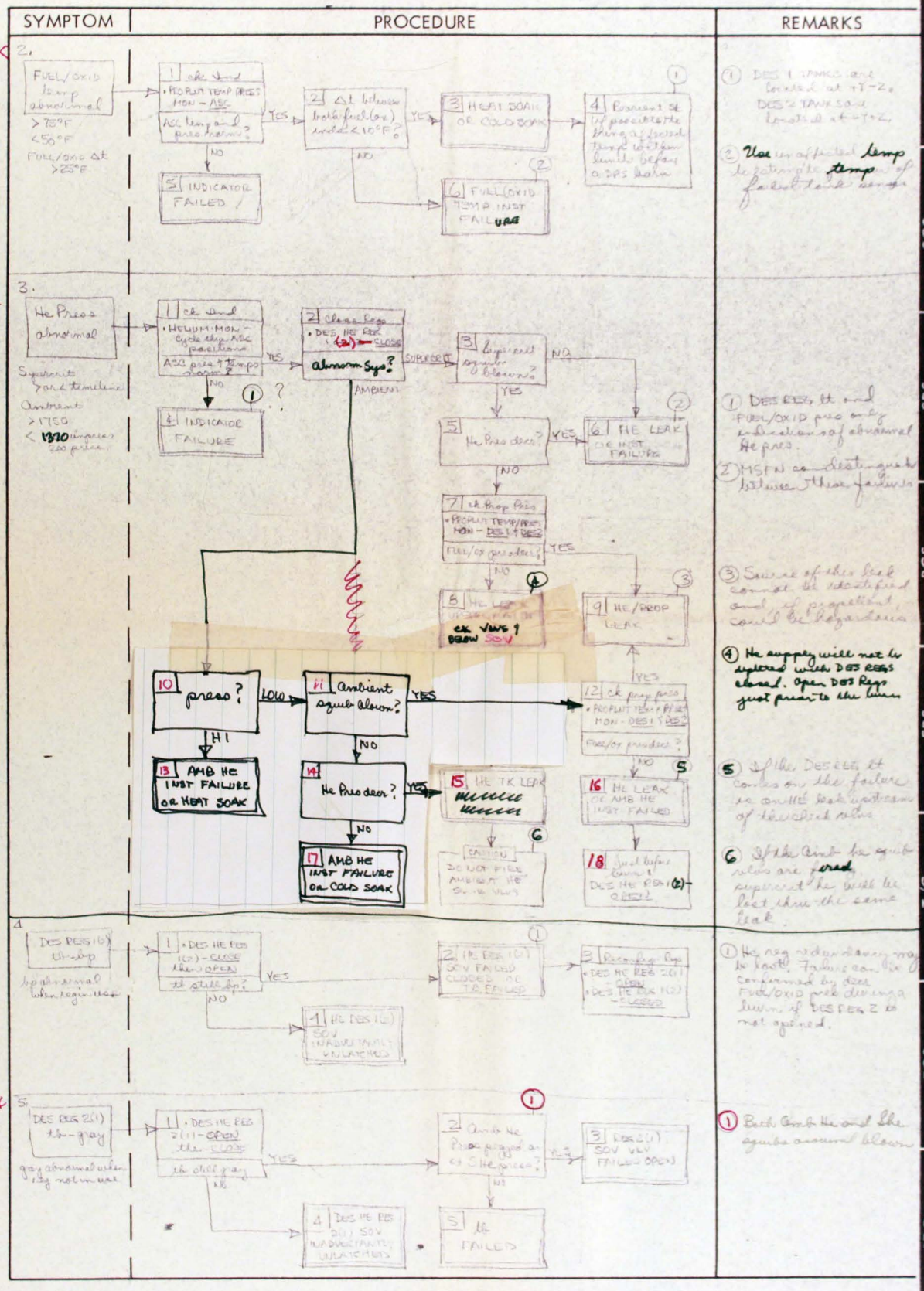

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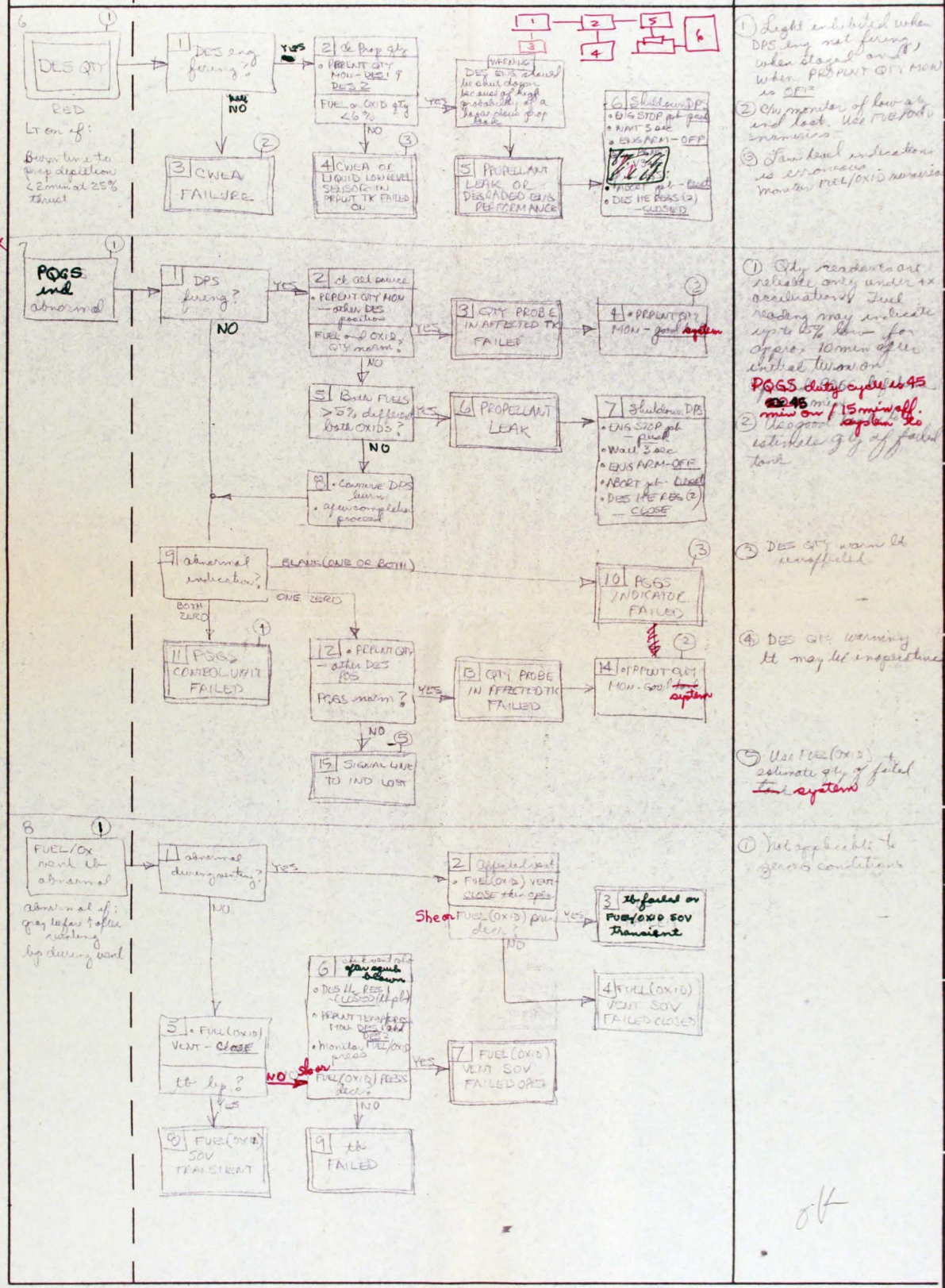

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